how readily the mouth temperature in noncoöperative patients can entirely misrepresent the real situation and lead to calamitous results. At the present time it seems to me that these treatments should be given in an institution where attendants can be properly trained and supervised, and where a physician is within call.

The contraindications to these treatments might also bear discussion. Hypertension, marasmus, myocarditis, all have been represented in patients subjected to high temperatures. We feel that careful medical supervision of each individual explains the lack of unfavorable results.

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FREDERICK LEET REICHERT, M. D. (Stanford University Hospital, San Francisco).—This work of Doctor Mehrtens and Doctor Pouppirt opens up a new field of therapy and makes one wonder as to its mechanism. Just as Weed and McKibben presented a new means of neurophysiological investigation with their hyper- and hypotonic intravenous solutions, so hyperpyrexia should give us means of studying the physiological effect of heat on brain tissue. Hyperpyrexia, applied to patients with large decompressions, would give information as to brain volume; and experimental studies on the cerebral circulation by dye absorption tests and microscopical inspection of the exposed cortical vessels should add much to our knowledge as to whether hyperpyrexia influences body structures directly or through the blood stream and, if through the blood stream, of its effect upon brain tissue and cerebral function.

Just recently an arteriosclerotic patient with marked symptoms of intermittent claudication, for whom various medicaments including a course of diathermy gave no relief, was subjected to these hot bath treatments with an immediate ability on his part to walk continuously twenty-eight blocks instead of the customary half block. Clinically he presented marked improvement. As to the mechanism in this case, one can only speculate at present.

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W. EDWARD CHAMBERLAIN, M. D. (Stanford University Hospital, San Francisco).—The simplicity and rationality of Doctor Pouppirt's and Doctor Mehrtens' method of producing hyperpyrexia must appeal to everyone. Too often we physicians "fall for" the more spectacular and elaborate methods, especially in the realm of physiotherapy. It reminds me of the reports of using diathermy for raising the temperature of patients under anesthesia as a preventive of surgical shock. Hot water bottles and blankets are much safer and just as effective, but not so spectacular.

Doctor Pouppirt and Doctor Mehrtens have developed the technique of this hot bath treatment until it can be said to be a remarkably efficient and effective and precise method of raising the patient's body temperature. We are looking forward with great interest to the results which they may obtain in a variety of diseases and conditions.

GWATHMEY ANALGESIA*

OBSERVATIONS ON ITS USE IN CLINIC AND PRIVATE PRACTICE

By LUDWIG A. EMGE, M. D.
AND
CHESTER L. COOLEY, M. D.
San Francisco

THE report presented here embodies the results of a comparative study on the use of the so-called Gwathmey analgesia in 200 deliveries, 100 of which were observed in the maternity service of the Stanford women's clinic, and 100 in the private service of one of us (Emge). The object of this report, which we make on the request of the section of anesthesia, is to compare the applicability, advantages and disadvantages of this method in two distinct groups of individuals in hospital practice. We omit a review of the literature, since the subject has been so admirably reviewed by Hatcher (*Journal A. M. A.*, 1927, Vol. 89).

* From the Department of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco.

* Read before the Anesthesiology Section of the California Medical Association at the Fifty-Eighth Annual Session, May 6-9, 1929.

GENERAL INDICATIONS

In going over all of our delivery records of the periods covered by this report, we found that, in clinic as well as in private practice, this method of analgesia had been used slightly less than 50 per cent. It was not used more frequently because of the exclusion of most of the multiparae and those primiparae whose labor either had advanced too far or showed an unusually rapid progress. In not using Gwathmey analgesia in this latter group we may have been overconservative, but from our earlier experience we concluded that the best interests of the mother and the child were not served if the period of expulsion and deep analgesia or anesthesia would occur simultaneously. Since we have no way of gauging the time element in the more rapid labors, we therefore managed this group with other pain-relieving measures, particularly chloral hydrate and nitrous oxid-oxygen analgesia. We attempt to confine the use of Gwathmey analgesia to labors which we can expect to be of average length or to be prolonged as in those complicated by occiput posterior positions, premature rupture of membranes, border-line pelves, and large babies. We have used the method in toxemias, placenta praevia, breech positions, and in conjunction with hydrostatic bags and have found it just as serviceable as in uncomplicated labors.

ANALYSIS OF TWO GROUPS OBSERVED

The two groups discussed here each represent the last one hundred deliveries aided by Gwathmey analgesia. The deliveries in the clinic group have been conducted mainly by the house staff of the department of obstetrics and gynecology, while the private group was delivered by one of us (Emge). The individuals of these groups fall into two social classes, namely, the working class and the upper middle class. We will assume that the latter group as a rule represents a higher level of intelligence. During their intensive prenatal care they are mentally prepared for a comparatively painless childbirth. This mental preparation undoubtedly makes these patients more often responsive to this analgesia than the clinic patient whose lower level of intelligence and superstitions act as a barrier. Of the 200 patients we have delivered under morphin-ether analgesia, 179 were primiparae and 21 multiparae.

TABLE 1.—*Showing Relief From Pain*

	Excellent	Good	Fair	Poor
Degree of Relief:				
Clinic Service	18	51	24	7
Private Service	25	56	15	4
Hours of Duration of Analgesia:				
Clinic Service	3-7	1-5	1-3	0-1
Private Service	1½-15	1-14	2½-11	4-6
Average Duration:				
Clinic Service	3.9	3.4	2.1	0.9
Private Service	6.3	3.8	4.8	5

	Very little	Usual end Anesthesia	No Anest.
Accessory Nitrous Oxid Required:			
Clinic Service	39	58	3
Private Service	15	75	10

The general result in the private group is distinctly better than in the clinic group although the incident of accessory anesthesia at delivery is higher in the former. We have observed that the nitrous oxid-oxygen mixture used in end anesthesias should be kept at 50 per cent or less in order to avoid too profound a temporary anesthesia, resulting in a complete lack of coöperation by the patient. In thirteen instances it was possible to deliver the fetus without accessory anesthetic. The marked difference in the frequency of complementary end anesthesia in the two groups must be explained on the ground of individual interpretation of the amount of gas actually used. The personnel attending to the anesthetics is not only different in the two hospitals in which these patients were delivered, but changes from time to time occur within the service. What constitutes "very little" and "just sufficient" gas varies with individual interpretation and cannot be accurate. If, therefore, we combine the first two groups of figures we find that they approach each other, namely, ninety-seven for the clinic and ninety for the private patients. In the "no anesthesia" group there is a marked difference in favor of the private group.

If we study the comparative duration of the analgesic period we find that throughout the four divisions the private group shows a greater length of analgesia. To explain this result satisfactorily we must assume that the patient's mental state and eagerness for relief is a deciding factor, for we have no way of explaining it on technical grounds since the method of administration is identical in both hospitals. For perhaps the same reason we find that amnesia after labor is apparently equally more frequent in the private group.

TABLE 2.—*Showing Effect on Labor*

Maternal:

	Confusion	Vomiting		Labor		Cessation
		Severe	Mild	Rushed	Prolonged	
Clinic	8	2	24	25	7	0
Private	6	4	12	12	8	8

Fetal:

	Mild Anesthesia	Severe Anesthesia	Stillborn
Clinic	13	6	2
Private	6	8	0

Deliveries:

	Spontaneous	Instrumental Total	Lack of Expul.	Occip. Post.	Breech	Cesarean
Clinic	70	28	14	14	1	1
Private	61	36	25	11	3	0

Many patients experience a fair degree of amnesia which undoubtedly would become permanent were it not that they discussed their experiences with other patients or friends. The average woman prides herself in having passed through a hard labor, and takes it as a rebuke if she is not believed. We find this particularly true of the less intelligent individual. It is, therefore, not always easy to ascertain the degree of amnesia experienced. The patient must be cautiously questioned prior to any discussions on her part with other individuals. We have not attempted to give any figures on account of the uncertainty in determining the degree of amnesia.

SPECIAL SYMPTOMS

Mental Confusion.—We saw marked confusion in 7 per cent of our patients. This occurred with almost equal frequency in both groups. To obviate this we have of late administered two grains of luminal by mouth to the patients of the private group. Since then marked confusion has not been seen. We believe that confusion is also lessened by the preliminary use of chloral hydrate administered rectally early in labor. In the private group the last twelve patients received instead of morphin and magnesium sulphate about one-half hour apart, only luminal and chloral hydrate, followed in from one-half to one hour by the ether-oil instillation. The result was equally as efficient as in the orthodox Gwathmey method. This modification has the advantage of avoiding respiratory depression of the newborn should labor terminate within a few hours after the ether injection. Our observations are too few to allow us to make a definite statement as to the advisability of substituting this modification for morphin-magnesium sulphate. While we have our doubts about synergism between morphin and magnesium sulphate in man we do not propose to enter into the existing controversy. Our experience has left us with the impression that, clinically speaking, it is of little importance if morphin is given alone or in conjunction with magnesium sulphate. In some instances we have omitted one or the other, or both, and found the degree of analgesia produced by ether-oil alone quite satisfactory.

Vomiting.—Vomiting, which may occur in any labor, seems to be more frequent in Gwathmey analgesia. It usually occurs soon after the ether instillation. Apparently it has no relation to the amount of food present in the stomach, but must be considered a reflex phenomenon due to a reversed gradient in intestinal peristalsis. While we never saw fecal vomiting we have noticed a pronounced odor of ether in the vomitus. We do not attribute any particular significance to this since vomiting is rarely a very disturbing factor. In our series it happened to be more frequent in the clinic patients.

Effect in Time of Labor.—It is interesting to note that labor was decidedly hastened in thirty-seven patients and retarded in fifteen. The table of clinic patients showed hastened labor twice as often as in the private patients, while prolonged labor was about equal in both groups. It is fairly simple to ascertain hastening of labor because these patients invariably speed up cervical dilatation very soon after the giving of morphin or immediately after the ether-oil administration. We feel that this is due most likely to morphin, the action of which is just about at its height when the ether-oil is being given. At times we have seen similar sudden cervical reactions when chloral hydrate was used in conjunction with morphin without the ether-oil, while we rarely have seen such an occurrence after chloral alone. Hence we believe that morphin is the responsible factor in many instances.

While it is comparatively easy to determine hastening of labor in Gwathmey analgesia, it is difficult to connect this method of inducing analgesia with prolonging of labor. In all fairness we must say that most of our prolonged labors could be ascribed to obvious obstetrical causes.

It is different with actual cessation of labor. In our series cessation occurred in eight of the private group, and was unquestionably due to Gwathmey analgesia. In three instances this should have been avoided had the examining house physician judged the dilatation of the cervix correctly. Although very definite rules regarding the time when the administration of the drugs should be started have been made, mistakes in judging cervical dilatation will be made, particularly when the cervix has been displaced posteriorly. In these eight instances labor ceased 3, 4, 4, 5, 7, 7, 11, and 15 hours respectively. Except for the inconvenience to patient and attending staff, cessation of labor is of no particular importance in the ultimate course of labor. We have not hesitated to repeat the rectal administration of ether after labor again has well been established. A second suppression of labor we have not experienced.

Effect on Newborn.—In studying the effect of the method on the newborn, we found that 19 (13 and 6) showed mild signs of anesthesia, 14 (6 and 8) severe anesthesia which required strenuous measures of resuscitation, and two were stillborn. These fetal deaths occurred in the clinic group. Autopsy showed aspiration of meconium in one. It would not be fair to attribute these deaths to Gwathmey analgesia, since they could equally well be obstetrical accidents. In the private group, in addition to the above observations, it was noticed that twenty-one babies assumed a typical position of mild opisthotonos immediately after delivery of the body. Most of these babies had a very slight bluish tinge for a few minutes after birth. We cannot say what this phenomenon might be due to because it will be seen irrespective of the length of the analgesia. So far we have not seen this phenomenon in the chloral hydrate modification, but, since the number of these patients is small, we have refrained from forming an opinion. On the whole there is sufficient evidence that fetal anesthesia is frequent and at times serious. Ether is commonly noticeable on the breath of the newborn even if manifestations of anesthesia are absent. In our minds this is a serious drawback to Gwathmey analgesia.

Effect on Labor.—In studying the effect of the Gwathmey method on labor we are certain that low forceps operations were increased in frequency. We saw 131 spontaneous deliveries (seventy private and sixty-one clinic); sixty-four forceps extractions; four breech extractions; and one cesarean section. Leaving out the latter two divisions, we can ascribe thirty-nine (fourteen private and twenty-five clinic) forceps extractions to lack of expulsion. We do not allow the head to remain on the perineum more than one hour, even if we believe ultimate spontaneous delivery is possible. Skillfully conducted, a low forceps extraction after episiotomy is less harmful to the fetal head than a prolonged perineal stage. The incident of twenty-nine instrumental deliveries, occasioned by persistent occiput posterior positions, must be considered an obstetrical accident. The number of occiput posterior positions cited here covers nearly five hundred deliveries and consequently is not unduly high. In the private series we observed seven spontaneous rotations in Gwathmey patients. No figures were available in the clinic series. It is our firm belief that the Gwathmey analgesia is of the greatest help in the trying and long-drawn-out labors due to this particular type of dystocia. We are also under the impression that spontaneous rotation occurs more frequently. In regard to the higher number of low forceps extractions in the private group, which is twice as high as in the clinic group, we believe it to be about the usual proportion. It has nothing to do with the method of analgesia. In a general way, the incident of nearly 20 per cent of instrumental deliveries in both groups for lack of expulsion is above the average. The increase must be ascribed to Gwathmey analgesia. In these instances the coöperative correlation of the patient is absent or uncertain although uterine contractions continue normally.

TABLE 3.—*Postpartum Observations*

	Rectal Irritation		Magn. Sulph.	Delay of
	Mild	Severe	Abscess	Lactation
Clinic	16	4	0	0
Private	11	2	1	0

In spite of a very careful preparation of the rectum before the ether-oil instillation and an early bicarbonate of soda enema, postpartum, we have seen thirty-three rectal irritations, six of which were very distressing. None of these patients had a history of colitis, which at all times should be a contraindication. We do not know how to obviate rectal irritation. Fortunately the severe types of irritation are few and last seldom more than forty-eight hours. While it is a distinct drawback to the method, it is not a sufficient objection to its use.

Magnesium sulphate abscess is very rare. The abscess forms under the fascia lata and, therefore, remains concealed. Any prolonged pain and suggestive induration in the region of injection should be suspected to be abscess formation and should be incised. The abscess will heal rapidly if opened early. Even at the risk of failing to find an abscess cavity, it is better to drain than to allow a concealed abscess to follow the fascial sheath.

To our knowledge, delay in lactation has not happened in this series.

The method has been used in conjunction with Voorhees bags, and proved quite satisfactory. In this series we saw two postpartum hemorrhages in each case, mild and not attributable to Gwathmey analgesia.

SUMMARY

In summarizing our observations we believe that, broadly speaking, the more intelligent patient makes a better subject for the use of Gwathmey analgesia although she requires instrumental help more frequently than the clinic patient. The slight increase of low forceps extraction in general is inconsequential in well-conducted hospital practice. The advantage of the analgesia in diffi-

cult labors, especially in occiput posterior positions, is excellent.

An analysis of the combined figures of the two groups shows that labor is often hastened, rarely prolonged, and seldom ceases, if certain time elements are observed.

While confusion, vomiting, and rectal irritations are objectionable, they are not sufficiently serious to disqualify the method. The only serious drawback that we can find in the method is the increased fetal anesthesia. We believe that this can ultimately be reduced by certain modifications in the selections of the preliminary drugs.

Our impression is that this method of analgesia is a distinct advance in the relief of the suffering of the laboring woman. We are aware that it must be modified as the needs require. Its applicability in our hands is about 50 per cent of all patients delivered. It is practically limited to the primiparae and those multiparae whose interval of childbearing is very long.

2000 Van Ness Avenue.

OPHTHALMIC DELUSIONS*

By AARON S. GREEN, M. D.
San Francisco

MANY people throughout the world entertain beliefs about the eyes that are pure superstitions; beliefs that date back to the time when the human race was still in its mental infancy. With the growth of human knowledge some of these have been outgrown and many have been cast aside by the majority of people, but a large number still persist throughout the world. Among such beliefs might be mentioned: that meeting a cross-eyed person will bring ill luck; that the eyes of a snake will cause birds to be hypnotized; that compressing the eyes with tea leaves is a good method of treating inflammation of the eyes. These and many similar delusions are often met with and not infrequently may be the cause of mental and physical suffering and sometimes even of blindness. Many of these delusions about the care and treatment of the eyes are not confined to the laity, but are still found among certain members of the medical profession. Special mention will be made of certain of these delusions.

VALUE OF ANTISEPTICS IN EYE THERAPY

Since the discovery of bacterial causes of disease, antiseptic measures have played a great part in the care and treatment of the eye. Thus the use of silver nitrate in the eyes of infants immediately after birth has prevented much blindness from ophthalmia neonatorum, which disease has been almost completely stamped out in the civilized countries through this treatment. However, the enthusiasm in the use of antiseptics is often carried too far, as it has become the custom of physicians to instruct the nurse or mother to treat the eyes with boric solution. This, of course, seems the more necessary when the eyes show much irritation following the use of the silver nitrate, and this conjunctival irritation is often mistaken for purulent conjunctivitis. When this occurs, the treatment with boric solution is reinforced with a stronger antiseptic such as zinc sulphate, and instead of the eyes clearing up, the conjunctival irritation is increased, and the infant is brought to the ophthalmologist. The conjunctival irritation after the use of the silver nitrate will clear up if left alone. Wiping the outside of the lids with a moist cotton applicator, if they are stuck together in the morning, is the only procedure necessary. Boric acid solution dropped into the eyes of an infant is worse than useless, as the eyes do not need any medical preventive other than the drop of silver nitrate. If the eyes are infected, boric acid is too mild an antiseptic to do any good; and the practice of dropping the solution into the eyes with a cotton wad dipped into boric acid does not prevent infection, but more than likely may be the cause of it.

STRABISMUS

As the child grows older he is apt to develop strabismus. A fallacy which is usually encountered, with reference to the care of the eyes in this condition, is not only accepted by the laity, but is also found among medical men, the latter perhaps being largely responsible for this misconception. This fallacy is that the child will outgrow crossed eyes, and that up to the age of fourteen the most that need be done is to fit the child with glasses. It is commonly thought that operation before that age is dangerous, as the eyes might deviate in the opposite direction. That these opinions were generally held, was demonstrated when the writer and his brother in 1915 and 1916 sent out a thousand questionnaires to ophthalmologists in the United States, in an effort to learn their methods of procedure in strabismus cases and their reasons therefor. The large majority held to the belief that it was advisable to wait. This belief apparently was not based upon scientific research and logic, but was simply empirical.

In preparing a paper that was presented at the American Medical Association of that year we made a careful study of the position of the eyes under complete rest. We obtained the coöperation of a number of anesthetists who observed the position of the eyes under complete anesthesia. We also studied the position of the eyes of cadavers in the city morgue. We examined hundreds of full-face photographs of cadavers on file at the morgue, taken from one to ten hours following death. From these studies we were forced to conclude that under complete muscular relaxation during life as well as after death, the position of the eyes is not always up and out, as usually taught, but may be in any position; apparently governed by the anatomical condition of the orbits or ocular muscles. We found more eyes with a convergent strabismus than divergent. In a practice extending over a period of twenty years we fail to recall any case where a "cross-eye" was outgrown without surgical or mechanical assistance. We have met many who claimed that their eyes had been crossed in childhood and were now straight. But a careful examination of such eyes

* Read before the Ophthalmological Section of the Utah State Medical Association, June 29, 1928.